InfiniVision

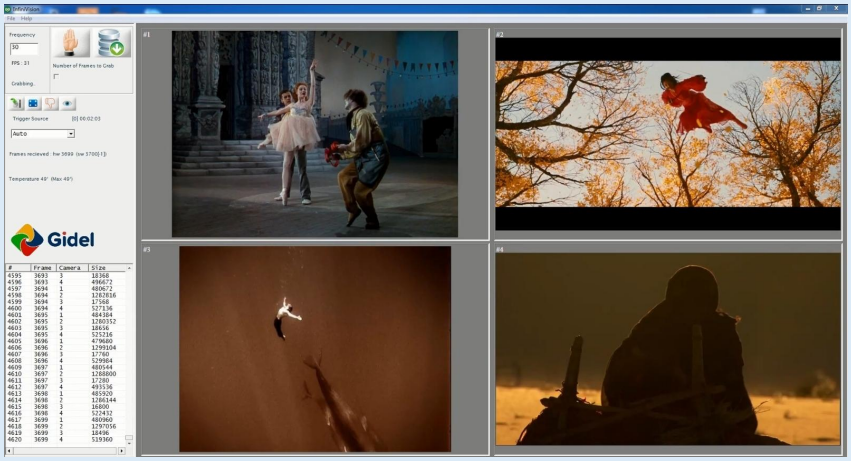
Multi-Camera Frame Grabbing and Processing System

Key Features

- Grabbing and synchronizing up to 100 cameras
- Grabbing capability of varying incoming data size
- Option for adding inline Image Signal Processing (ISP)
- Option for inline image compression
- Support for CoaXPress, Camera Link,and MIPI.
- Ability to tailor to any camera interface and protocol
- Acquisition rate of up to 50 Gb/s per board
- Up to 16 GB image frame buffer
- PCIe Gen. 3 host interface at up to 64 Gb/s CPU free host offload capacity
- Diverse I/O capabilities: RS422, opto-couplers, LVTTL and 30 V drivers/recievers
- Powerful image processing capabilities on Intel FPGA devices
- Supported by the Gidel Developer's suite for simplifying and accelerating development on FPGA. The suite includes the Gidel ProcWizard application and support for Intel HLS compiler enabling using C++ as the source code for the FPGA.

Target Applications

- Broadcasting and Video
- Augmented Reality
- Video and Audio Compression
- Smart Cities
- Surveillance
- Sorting Machines



The Gidel InfiniVision™ provides flexible infrastructure for acquisition and processing from multi-cameras/sensors simultaneously. The system can capture data streams of varying frame data size as well as to synchronize between up to 100 cameras/sensors. Camera interfaces currently offered by Gidel include CoaXPress, Camera Link, MIPI as well as an option for customization of the camera/sensor interface and protocol. The acquisition path enables adding data processing blocks such as ISP (Image Signal Processing) and compression.

InfiniVision can capture multiple image streams in two ways:

1. From many cameras examining a single scenario.
2. From a single camera capturing images of a single scenario at varying angles.

In both cases, InfiniVision enables building a full coherent image based on multiple synchronized images. The synchronization mechanism automatically re-synchronizes data streams that may have been momentarily interrupted.

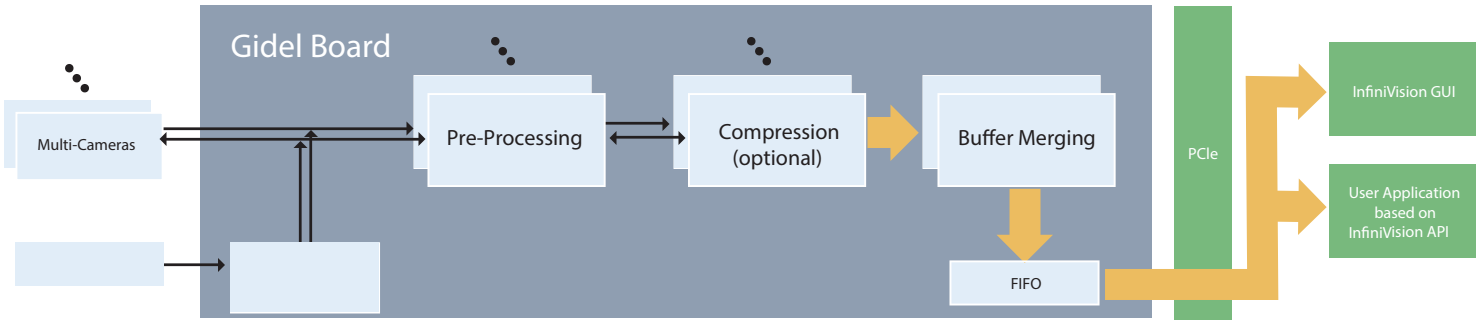
InfiniVision's ability to grab on-the-fly any incoming data size adds another dimension of flexibility enabling Imaging applications to combine images of various sizes arriving, for example, from different camera types or from selective ROIs of variable sizes.

InfiniVision Multi-Camera Frame Grabbing and Processing System

FEATURE	SPECIFICATIONS
Acquisition Rate	Up to 50 Gb/s per board
Cameras Supported	CoaXPress, Camera Link, MIPI6 and option for tailoring to any camera interface/protocol
Pixel Formats Supported	Mono, Bayer, RGBA (8, 10, 12, 14 and 16 bits/color) and RGB (8, 10 and 12 bits/color).
Trigger Synchronization	Up to a 100 cameras
Connectors	SDR26 (for Camera Link) DIN 1.0/2.3 (for CoaXPress) MIPI CSI-2 (for MIPI6) VGA15-pin (for GPIO) Option for custom connector
FPGA	Intel Arria 10
Host Bus	PCIe x8 Gen. 3

FEATURE	SPECIFICATIONS
Host Throughput	Up to 64 Gb/s
Form Factor	PCIe low-profile
GPIO	RS422, opto-coupler, LVTTL and 30V at 0.9A
Software and Ecosystem Support	API suite and examples. ProcWizard Development tool for efficient FPGA development. Option for evaluation and simulation using the Gidel CamSim camera simulator
Customization Options	• camera/sensor interface and protocol • Image Signal Processing on FPGA • On-FPGA image compression • Option for Gidel to perform the customization according to user specifications

The Gidel InfiniVision system consists of an FPGA board, firmware, camera interfaces, PCIe interface, GUI Application and API library. The following figure shows a typical system implementation.



InfiniVision System Block Diagram

The InfiniVision acquisition path is from the source cameras to the Gidel Board that pre-processes, compresses (optional) and finally merges the multi-camera image streams into a FIFO buffer. The data is then offloaded via the PCIe interface to an external host application. For simulation or evaluation purposes, the Gidel CamSim can be used to simulate the cameras. The InfiniVision or a User application based on Gidel's API configures and controls the system, implements the host post-processing and displays the grabbed image streams.

International Distributors

sky blue microsystems

Sky Blue Microsystems GmbH
Geisenhausenerstr. 18
81379 Munich, Germany
+49 89 780 2970, info@skyblue.de
www.skyblue.de

ZERIF TECHNOLOGIES LTD.
A SKY BLUE COMPANY, FOUNDED 1999

In Great Britain:
Zerif Technologies Ltd.
Winnington House, 2 Woodberry Grove
Finchley, London N12 0DR
+44 115 855 7883, info@zerif.co.uk
www.zerif.co.uk